Telehealth: The Key to Delivering High-Quality Care for Heart Failure - Now and in the Future

(685 words)

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In this issue of the Lancet, Koehler and colleagues publish the results of a large trial of home telemonitoring (HTM) for heart failure (Telemedical Interventional Monitoring in Heart Failure (TIM-HF-2) (1), which showed a benefit on its primary endpoint (days lost due to unplanned cardiovascular hospitalisations or all-cause mortality), driven predominantly by a reduction in cardiovascular deaths; indeed HTM triggered some potentially life-saving hospitalisations. The result is rather similar to that of one of the first large trials of HTM for heart failure (Trans-European Network Homecare Monitoring Study - TEN-HMS) (2). Neither study on its own is convincing but, despite much clinical scepticism and feeble support from most guidelines (3, 4), the growing weight of evidence suggests that HTM does reduce mortality for patients with heart failure (5) and this effect may be substantial. These and other trials (6) also show that the emphasis placed on hospitalisation for heart failure might be misplaced, at least from a patient's perspective, because the proportion of days lost to hospitalisation is small compared to those lost due to death.

The key components of HTM are an electronic health record accessible to both patients and health professionals; trustworthy educational support for all concerned; accountable healthcare professionals who are actively involved in the patients' care who provide human-contact when patients need it (remote monitoring should not be synonymous with impersonal healthcare); integration across primary and secondary care providers; sensors that evaluate physiological variables to guide therapeutic practice incorporated into a patients daily routine, therapeutic goals that optimise the patient's health-state rather than just trying to detect impending crises (7) and finally audit of progress towards agreed goals. Information technology and health professional must work in synergy.

Of course, some trials of HTM have not been positive. HTM is a complex intervention that does not easily lend itself to conventional trial designs that randomise individual patients. Providing an integrated service to one patient but not another within a single centre is difficult and is bound to lead to 'contamination' unless measures are taken to ensure that the

control group does not receive enhanced care (8). Cluster randomised trials might be a better approach (9).

TIM-HF2 built on experience from a preceding trial (10), excluding patients with depression who might be less likely to comply with HTM; poor compliance may have been responsible for several prior failures. Clearly, HTM may not work for every patient – but no intervention does. A major problem with trials of HTM is that we have tried to create one-size fits-all approach, but patients and their needs are diverse in terms of their geographic remoteness, their ability to manage self-care, their social support, co-morbidity and cognitive function and access to and willingness to use devices.

HTM puts the patient back in the centre of health-care, ensuring that they know what the health professional is trying to achieve and that they agree with those aims. Ultimately, patients and their families are a large and relatively untapped healthcare resource (11). HTM can enable, empower and enrich the quality of patient self-care by providing a trusted, personalised environment supported by the synergy between technology and the expertise of health professionals creating a virtuous cycle of personal responsibility for improvement.

Some key issues currently holding back deployment of HTM are the failure to develop sustainable business models, lack of integration into existing health services, the scepticism of those who have no experience of HTM, the failure of guidelines to consider the totality of evidence and the lack of a large, robust trial with a control group that truly reflects usual clinical care.

HTM systems will continue to evolve, in terms of sensors, access, computing power, artificial intelligence (AI) and new therapies. Further trials are required. These will most likely be large, cluster-randomised trials focussing on chronic diseases for which highly effective treatments exist and using AI to develop and implement evidence-based algorithms that overcome therapeutic inertia and optimise treatment for patients as individuals. HTM systems provide~~d~~ a valuable organisational structure for maintaining and improving the quality of care for long-term medical conditions such as heart failure; we should use them and learn (8).

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